REMARKS

This amendment responds to the office action mailed June 23, 2004. In the office action the Examiner:

- allowed claims 3 and 19;
- requested an appropriate action responsive to the double patenting rejection made in the first office action dated Apr. 1, 2002;
- rejected claims 4-18 and 20 under 35 USC 112, second paragraph;
- rejected claims 1, 2 and 8 under 35 USC 103(a) as being unpatentable over Tran et al., (US 6,359,987) in view of Hildebrand (US 5,727,074) and further in view of Gambacurta, et al. (US 4,939,782);
- indicated that claims 4, 9-10, 13, 15 and 20 would be allowable if rewritten or amended to overcome the rejection(s) under 35 USC 112, second paragraph, set forth in this office action; and
- indicated that claims 5-7, 11-12, 14 and 16-18 would be allowable if rewritten or amended to overcome the rejection(s) under 35 USC 112, second paragraph, set forth in this office action and to include all the limitations of the base claims and any intervening claims.

After entry of this amendment, the pending claims are: claims 1-20.

Double Patenting Rejection

Although the Applicant does not necessarily agree with the Examiner's reasoning for the double patenting rejection articulated in the first office action, mailed April 1, 2002, in order to expedite prosecution, the Applicant hereby encloses a Terminal Disclaimer that disclaims the terminal part of any patent granted on the present application which would extend beyond the expiration date of United States Patent number 6,163,789.

Claim Rejections - 35 USC 112

The Examiner rejected claims 4-7 and 15-18 under 35 USC 112, second paragraph, for lack of antecedent basis for the limitation "seventh set of instructions", but indicated that they would be allowable if the rejections under 35 USC 112, second paragraph, are appropriately overcome.

The Applicant has amended claims 4-7 and 15-18 accordingly and therefore submits that claims 4-7 and 15-18 are in condition for allowance.

The Examiner also rejected claims 8-10, 13, 15 and 20 under 35 USC 112, second paragraph, as indefinite for the limitation "a type of the USB loud speaker". The Applicant respectfully disagrees.

Claim 8 recites a method for improving audio quality of a computer that includes a Universal Serial Bus (USB) loud speaker. The method includes a step of determining automatically a specific type of the USB loud speaker of the computer. For example, in a two-tier categorization of speakers, a speaker can be a USB speaker or a non-USB speaker. The category of USB speaker can be further split into multiple sub-categories, each sub-category corresponding to a unique type of USB speaker.

Section B of the Applicant's specification (from page 7, line 8 to page 8, line 11 in connection with Figs. 2 and 6), "The Equalizer Activator", expressly recites a two-tier categorization of speakers. In particular, the speaker 24 is defined as a USB speaker if the bus 44 connecting the speaker 24 is a universal serial bus (USB) and the USB speaker 24 then responds to a query by identifying its USB speaker type. Different types of USB speakers may require different sets of equalizer parameters. In one embodiment, a distinct set of default equalizer parameters is stored in the computer memory for each type of commercially available USB speaker, because different types of USB speakers may have different actual frequency responses and different desired frequency responses. Three exemplary sets of default equalizer parameters, one corresponding a particular type of USB speaker and two corresponding to two non-USB speakers are provided in the second and third paragraphs of section B.

Since the limitation "a type of the USB speaker" recited in claims 8-10, 13, 15 and 20 refers to a particular sub-category of USB speakers under a general category of USB speakers, there is no indefiniteness in any of the claims, and the Applicant submits that claims 8-14 and 20 are in condition for allowance.

Claim Rejections - 35 USC 103

Claim 1, as amended, recites a computer readable memory to direct a computer to function in a specified manner. The memory comprises multiple sets of instructions, each set for accomplishing a specific function. For example, a first set of instructions is responsible

for automatically determining a type of a speaker of the computer, a second set of instructions is responsible for selecting a set of filter coefficients for a plurality of digital filter based upon the type of the speaker, and a third set of instructions is responsible for realizing a parametric equalizer using the plurality of digital filters, the digital filters responsible for producing an output signal to be input to the speaker from the set of filter coefficients and an input signal. In particular, the parametric equalizer comprises a plurality of equalizer bands, each equalizer band having at least two of the plurality of digital filters.

As noted by the Examiner, Tran does not address digital filters for equalizer bands.

Contrary to the Examiner's argument, the audio equalization system of Hildebrand discloses **one and only one** digital filter. Hildebrand (from col. 5, line 54 to col. 6, line 3) teaches a three-step method of producing the digital filter by (1) warping data in the frequency domain, (2) creating an FIR or IIR filter using the warped data and (3) inverse warping the created filter into a new filter (or the digital filter). The digital filter created by the three-step method can be implemented in an apparatus (e.g., the DSP in Figs. 3-5 of Hildebrand) for modifying the audio response of an audio reproduction system. There is no teaching or suggestion in Hildebrand that a DSP has more than one digital filter.

Gambacurta teaches a multi-band graphic equalizer that includes multiple controllable frequency response determining elements. However, each of the controllable frequency response determining elements includes **one and only one** filter. In contrast, each equalizer band of the Applicant's invention includes at least two digital filters (see, e.g., Fig. 5).

Since the three cited references, alone or combined, do not teach or suggest the limitation "a plurality of digital filters" or the limitation "each equalizer band having at least two of the plurality of digital filters, claim 1 and its dependent claim 2 are patentable over the cited references.

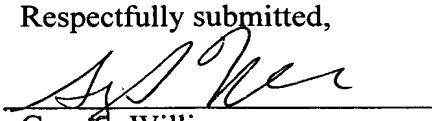
Claim 8, as amended, is directed to a method for improving audio quality of a computer that includes limitations similar to those recited in claim 1. Claim 8 further recites that the computer includes a Universal Serial Bus (USB) loud speaker. In contrast, none of the cited references disclose the limitation "a USB loud speaker". As a matter of fact, the only occurrence of the term "USB" in Tran (the USB connectors 32 in Fig. 2 of Tran) has nothing to do with a speaker, and the speaker therein is actually connected to the computer

processing unit 12 through an I/O controller 44. Therefore, claim 8 is also patentable over the cited references.

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,

Date: September 1, 2004



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